

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A transgenic ~~ungulate comprising bovine whose cells~~ comprise one or more artificial chromosomes, each artificial chromosome comprising one or more xenogenous immunoglobulin loci that undergo rearrangement and ~~express a are expressed in B-cells to produce~~ xenogenous immunoglobulin in response to exposure to one or more antigens.

2. (Currently amended) The ~~ungulate transgenic bovine~~ of claim 1, wherein said xenogenous immunoglobulin ~~molecule~~ is a human immunoglobulin ~~molecule~~.

3. (Currently amended) The ~~ungulate transgenic bovine~~ of claim 1, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

4. (Currently amended) The ~~ungulate transgenic bovine~~ of claim 3, wherein said human artificial chromosome is Δ HAC or $\Delta\Delta$ HAC.

5-9. (Cancelled)

10. (Currently amended) An ~~ungulate A transgenic bovine B-cell somatic cell~~ comprising one or more artificial chromosomes, each artificial chromosome comprising one or more xenogenous immunoglobulin loci ~~capable of undergoing rearrangement and~~

~~expressing that undergo rearrangement and are expressed to produce a xenogenous immunoglobulin in response to exposure to one or more antigens molecule in B cells.~~

11. (Currently amended) The cell of claim 10, wherein said xenogenous immunoglobulin molecule is a human immunoglobulin molecule.

12. (Previously presented) The cell of claim 10, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

13-20. (Cancelled)

21. (Currently amended) A method of producing xenogenous antibodies, said method comprising the steps of: (a) administering one or more antigens of interest to an ~~ungulate comprising a bovine whose cells comprise~~ one or more artificial chromosomes, each artificial chromosome comprising one or more xenogenous immunoglobulin heavy and light chain loci that undergo rearrangement and are expressed in B-cells, resulting in production of xenogenous antibodies against said one or more antigens; and (b) recovering said xenogenous antibodies from said ~~ungulate bovine~~.

22. (Cancelled)

23. (Previously presented) The method of claim 21, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

24. (Currently amended) The method of claim 21, wherein said immunoglobulin heavy and light chain loci comprise a human immunoglobulin locus heavy chain locus and a human immunoglobulin light chain locus.

25. (Cancelled)

26. (Currently amended) A method of producing xenogenous antibodies to one or more antigens, said method comprising recovering xenogenous antibodies from a bovine that has been exposed to said one or more antigens and whose cells comprise an ungulate, said ungulate comprising one or more artificial chromosomes, each artificial chromosome comprising one or more xenogenous immunoglobulin heavy and light chain loci that undergo rearrangement and are expressed in B-cells, resulting in the production of xenogenous antibodies in response to said one or more antigens.

27. (Cancelled).

28. (Previously presented) The method of claim 26, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

29-48. (Cancelled)

49. (Currently amended) The ungulate transgenic bovine of claim 1, wherein said xenogenous immunoglobulin molecule is an a xenogenous immunoglobulin light chain.

50. (Currently amended) The ungulate transgenic bovine of claim 1, wherein said xenogenous immunoglobulin molecule is an a xenogenous immunoglobulin heavy chain.

51. (Currently amended) The ungulate transgenic bovine of claim 3, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

52. (Currently amended) The cell of claim 10, wherein said xenogenous immunoglobulin molecule is an a xenogenous immunoglobulin light chain.

53. (Currently amended) The cell of claim 10, wherein said xenogenous immunoglobulin molecule is an a xenogenous immunoglobulin heavy chain.

54. (Previously presented) The cell of claim 12, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome

2, and human chromosome 22.

55-56. (Cancelled)

57. (Previously presented) The method of claim 23, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

58. (Cancelled)

59. (Currently amended) The method of claim 26, wherein said immunoglobulin molecule is an heavy and light chain loci comprise a human immunoglobulin heavy chain locus and a human immunoglobulin light chain locus.

60. (Previously presented) The method of claim 28, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

61. (Currently amended) A method of producing xenogenous immunoglobulin, said method comprising providing an ungulate, said ungulate comprising a bovine whose cells comprise one or more artificial chromosomes, each artificial chromosome

comprising one or more xenogenous immunoglobulin loci that undergo rearrangement and ~~express a~~ are expressed in B-cells to produce xenogenous immunoglobulin in response to exposure to one or more antigens, and (ii) recovering said xenogenous immunoglobulin.

62. (Currently amended) The method of claim 61, wherein said xenogenous immunoglobulin molecule is ~~an~~ a xenogenous immunoglobulin light chain.

63. (Currently amended) The method of claim 61, wherein said xenogenous immunoglobulin molecule is ~~an~~ a xenogenous immunoglobulin heavy chain.

64. (Previously presented) The method of claim 61, wherein said one or more artificial chromosomes comprise a human artificial chromosome.

65. (Previously presented) The method of claim 64, wherein said human artificial chromosome is derived from one or more of human chromosome 14, human chromosome 2, and human chromosome 22.

66. (New) The transgenic bovine of claim 1, wherein said immunoglobulin loci comprise both a xenogenous immunoglobulin light chain locus and a xenogenous immunoglobulin heavy chain locus.

67. (New) The transgenic bovine of claim 66, wherein said xenogenous immunoglobulin light chain locus is a human immunoglobulin light chain locus and said xenogenous immunoglobulin heavy chain locus is a human immunoglobulin heavy chain locus.

68. (New) The cell of claim 10, wherein said immunoglobulin loci comprise both a xenogenous immunoglobulin light chain locus and a xenogenous immunoglobulin heavy chain locus.

69. (New) The cell of claim 68, wherein said xenogenous immunoglobulin light chain locus is a human immunoglobulin light chain locus and said xenogenous immunoglobulin heavy chain locus is a human immunoglobulin heavy chain locus.

70. (New) The cell of claim 12, wherein said human artificial chromosome is Δ HAC or $\Delta\Delta$ HAC.

71. (New) The method of claim 23, wherein said human artificial chromosome is Δ HAC or $\Delta\Delta$ HAC.

72. (New) The method of claim 28, wherein said human artificial chromosome is

Δ HAC or $\Delta\Delta$ HAC.

73. (New) The method of claim 61, wherein said immunoglobulin loci comprise both a xenogenous immunoglobulin light chain locus and a xenogenous immunoglobulin heavy chain locus.

74. (New) The method of claim 73, wherein said xenogenous immunoglobulin light chain locus is a human immunoglobulin light chain locus and said xenogenous immunoglobulin heavy chain locus is a human immunoglobulin heavy chain locus.

75. (New) The method of claim 64, wherein said human artificial chromosome is Δ HAC or $\Delta\Delta$ HAC.

76. (New) A B-cell obtained from a transgenic bovine of claim 1.